

-24-

CLAIMS:

1. An apparatus for routing data packets in a network comprising a plurality of nodes each arranged to support one or both of a first and second set of one or more protocols, the apparatus being included, in use, in a first network node which is associated with at least one database, the apparatus being arranged to create entries in said at least one database, each entry relating to at least one respective path from said first network node to a respective destination node in the network, wherein the apparatus is arranged to determine, when creating an entry in respect of at least one path to a destination node, if said destination node supports both of said first and second protocol sets, and being further arranged, upon so determining, to associate information with said entry identifying said destination node as a dual router, and wherein the apparatus is further arranged, when creating subsequent entries in respect of paths to other destination nodes which paths include said destination node, to associate said identifying information with said subsequent entries.
2. An apparatus as claimed in Claim 1, wherein the apparatus is arranged to determine, when creating an entry in respect of at least one path to a destination node, the encapsulation capability of said destination node which supports both of said first and second protocol set.
3. An apparatus as claimed in Claim 1, said first network node including a first database for holding entries in respect of tentative paths to destination nodes, and a second database for holding entries in respect of shortest paths to destination nodes, the apparatus being arranged to derive at least some of the entries in said second database from respective entries in said first database, and to derive at least some of the entries in said second database from respective entries in said first database.
4. An apparatus as claimed in Claim 3, wherein the apparatus is arranged to determine if a destination node supports both of said first and second protocols when creating an entry in said second database, and to associate said identifying information with the, or each, entry in the first database which is subsequently derived from said entry in the second database.
5. An apparatus as claimed in Claim 3, wherein said apparatus is arranged to determine the encapsulation capability of said destination node in respect of said first and second protocol sets when creating an entry in said second database, and to associate said identifying information which the, or each, entry in the first database, and to associate said identifying

-25-

information with the, or each, entry in the first database which is subsequently derived from said entry in the second database.

5 6. An apparatus as claimed in Claim 4, wherein the apparatus is arranged to associate said identifying information with one or more subsequent entries in said second database derived from the, or each, of said first database entries.

10 7. An apparatus as claimed in Claim 3, wherein, in respect of an entry added to said second database, the apparatus is arranged to create selectively a respective entry in said first database in respect of at least one path to the, or each, network node that is adjacent the destination node to which said added second database entry relates.

15 8. An apparatus as claimed in Claim 3, wherein each entry includes an indicator of the cost of sending a data packet from the first node to the destination node of the entry, the apparatus being arranged to create an entry in said second database in respect of the entry in the first database having the lowest cost indicator.

20 9. An apparatus as claimed in Claim 1, wherein the apparatus is arranged to include said identifying information in each relevant database entry.

25 10. An apparatus as claimed in Claim 9, in which each database entry relating to at least one path to a destination node includes, in respect of the, or each path, a respective dual protocol field for carrying said identifying information, wherein the, or each, dual protocol field may be set to identify a dual router in the respective path, or to indicate that no known dual router exists in said respective path.

30 11. An apparatus as claimed in Claim 10, wherein, when creating an entry in respect of at least one path to a destination node, the apparatus is arranged to determine if the destination node supports both of said first and second protocol sets only if at least one of the, or each, dual protocol field is set to indicate that no known dual router exists in the respective path.

35 12. An apparatus as claimed in Claim 11, whereupon determining that said destination node supports both of said first and second protocol sets, the apparatus is arranged to set the respective dual protocol field to identify said destination node.

-26-

13. An apparatus as claimed in Claim 10, wherein each of said entries further includes at least one adjacent node field for identifying which adjacent node of said first node is the first node in said path to the destination node, and wherein the, or each, adjacent node field is associated with a respective dual protocol field.

5

14. An apparatus as claimed in Claim 1, wherein the network nodes are arranged to implement one or more Link State Protocols and wherein said first network node includes a third database for storing routing data packets that are distributed by each other network node in accordance with the, or each, Link State Protocol, the apparatus being arranged to examine the respective routing data packet issued by a destination node in order to determine if said destination node supports one or both of said first and second protocol sets.

10

15. An apparatus as claimed in Claim 14, wherein at least the network nodes that support both of said first and second protocol sets are arranged to support Integrated IS-IS Link State Protocol, the apparatus being arranged to examine the "protocols supported" field of the respective routing data packets.

15

16. An apparatus as claimed in Claim 14, wherein at least the network nodes that support both of said first and second protocol sets are arranged to support Integrated IS-IS Link State Protocol, the apparatus being arranged to examine the "encapsulation capability" field of the respective routing data packets.

20

17. An apparatus as claimed in Claim 1, wherein said first and second protocol sets each comprise an OSI protocol set or an IP protocol set.

25

18. A network node comprising an apparatus as claimed in Claim 1.

19. A heterogeneous network comprising one or more network nodes comprising an apparatus as claimed in Claim 1.

30

20. In an apparatus for routing data packets in a network comprising a plurality of nodes each arranged to support one or both of a first and second set of one or more protocols, the apparatus being included, in use, in a first network node which includes at least one database, the apparatus being arranged to create entries in said at least one database, each entry relating to at least one respective path from said first network node to a respective destination node in the network, a method of identifying dual routers, the method comprising: determining, when

35

20250710 22:46:00

-27-

creating an entry in respect of at least one path to a destination node, if said destination node supports both of said first and second protocol sets;

associating, upon so determining, information with said entry identifying said destination node as a dual router; and, when creating subsequent entries in respect of paths to other destination nodes which paths include said destination node, associating said identifying information with said subsequent entries.

21. A computer program product comprising computer useable instructions for causing a computer to implement the method claimed in Claim 20.

22. In an apparatus for routing data packets in a network comprising a plurality of nodes each arranged to support one or both of a first and second set of one or more protocols, the apparatus being included, in use, in a first network node which includes at least one database, the apparatus being arranged to create entries in said at least one database, each entry relating to at least one respective path from said first network node to a respective destination node in the network, a method of identifying dual routers, the method comprising: determining, when creating an entry in respect of at least one path to a destination node, the encapsulation capability of said destination node if said destination node supports both of said first and second protocol sets; associating, upon so determining, information with said entry identifying said destination node as a dual router having said encapsulation capability; and, when creating subsequent entries in respect of paths to other destination nodes which paths include said destination node, associating said identifying information with said subsequent entries.